

WHAT IS CLAIMED IS:

1. A system for communicating information related to the position of a mobile station within a wireless communication infrastructure, comprising a data server capable of communicating with the wireless communication infrastructure, wherein the mobile station and the data server communicate via the wireless communication infrastructure using formatted messages representing wireless communication infrastructure state information related to the position of the mobile station within the service area of the wireless communication infrastructure.

2. The system of Claim 1, wherein the formatted messages are short message service (SMS) messages.

3. The system of Claim 1, wherein the wireless communication infrastructure uses code division multiple access.

4. The system of Claim 1, wherein the mobile station is a cellular telephone.

5. The system of Claim 1, wherein the mobile station is a PCS handset.

6. The system of Claim 1, wherein the state information related to the position of the mobile station includes a base station identification and sector pseudo-noise offset.

09885436 "061801

7. The system of Claim 1, wherein the state information is in the form of a standard string format.

8. The system of Claim 7, wherein the more critical information is listed first in the string.

9. A wireless communication system comprising:
a data server;
a base station which communicates with the data server;
and
a mobile station which communicates with the base station, the mobile station transmitting formatted messages to the base station for further communication to the data server, wherein the formatted message includes the mobile station position information.

10. The wireless communication system of Claim 9, wherein the wireless communication system uses the code division multiple access format.

11. The wireless communication system of Claim 9, wherein the formatted messages are short message service (SMS) messages.

12. The wireless communication system of Claim 9, wherein the formatted messages are browser calls.

13. The wireless communication system of Claim 9, wherein the mobile station communicates via the base station

the formatted messages to an application or service on the data server.

14. The wireless communication system of Claim 13, wherein the application or service on the data server is the Wireless Markup Language Script (WMLScript).

15. The wireless communication system of Claim 14, wherein the communication to the Wireless Markup Language Script is via a Wireless Application Protocol Wireless Telephony Application Interface.

16. The wireless communication system of Claim 9, wherein the formatted message is a text string.

17. The wireless communication system of Claim 9, wherein the mobile station position information is derived from base station identification.

18. A method of communicating mobile station position information in a wireless communication system comprising:

determining the position information of the mobile station;

creating a formatted message including the position information; and

transmitting the formatted message to a data server via the wireless communication system.

09885436 "061801

19. The method of Claim 18, further comprising detecting the base station identification information to determine the position information.

20. The method of Claim 18, further comprising placing the more important information at the beginning of the formatted message.

21. The method of Claim 18, further comprising communicating within the wireless communication system using code division multiple access standard.

22. The method of Claim 18, further comprising forming the message in the short message service (SMS) format.

23. A mobile station for use in a wireless communication system comprising:

a position locator which defines the geographic position of the mobile station; and

a message formatter which creates a message containing the geographic position information of the mobile station.

24. The mobile station of Claim 23, wherein the mobile station communicates the message to a base station.

25. The mobile station of Claim 23, wherein the mobile station operates using the code division multiple access standard.

26. The mobile station of Claim 23, wherein the message formatter creates a short message service (SMS) message.

09885436 "061801

27. The mobile station of Claim 23, wherein the mobile station is a cellular handset.

28. The mobile station of Claim 23, wherein the mobile station is a PCS handset.

29. A data server for use in a wireless communication system comprising:

means for communicating with a mobile station, wherein the data server receives a formatted message from the mobile station, the formatted message including information defining the position of the mobile station in the wireless communication system; and

applications which extract the position information from the formatted message.

30. The data server of Claim 29, wherein the data server communicates with a base station.

31. The data server of Claim 30, wherein the base station communicates with the mobile station.

32. The data server of Claim 29, wherein the position information is used to determine appropriate data to transmit back to the mobile station.

33. The data server of Claim 29, further comprising a network database correlated with position information.

34. The data server of Claim 29, wherein the means for communicating uses the code division multiple access format.

09885436-061801

35. A formatted message communicating position information of a mobile station in a wireless communication system comprising:

a header defining the information type;
a base station information field which includes information relating to the base station identification and active sector.

36. The formatted message of Claim 35, wherein the message is a short message service (SMS) message.

37. The formatted message of Claim 35, further comprising fields relating to previous base station identification.

38. The formatted message of Claim 35, wherein the message includes information in the standard code division multiple access format.

39. A method of communicating a position of a mobile station in a wireless communication system comprising the steps of:

generating a message containing position information of the mobile station;

communicating the message via a wireless communication means; and

receiving the message at a data server.

09885436-061801

40. The method of Claim 39, further comprising detecting base station identification information to determine the position information.

41. The method of Claim 39, further comprising formatting the message so the critical information is at the beginning of the formatted message.

42. The method of Claim 39, further comprising the communication means using a code division multiple access standard.

43. The method of Claim 39, further comprising forming the message in the short message service (SMS) format.

44. A system for communicating information related to the position of a mobile station comprising:

a mobile station capable of transmitting and receiving signals to and from a wireless communication infrastructure;

a wireless communication infrastructure that can transmit and receive signals to and from the mobile; and

a data server capable of communicating with said wireless communication infrastructure;

wherein said mobile station and said data server communicate via said wireless communication infrastructure using formatted messages representing current and past wireless communication state information related to said current and past positions of said mobile station.

45. The system of Claim 44, wherein said wireless communication state information includes system identification.

46. The system of Claim 44, wherein said wireless communication state information includes network identification.

47. The system of Claim 44, wherein said wireless communication state information includes channel designation.

48. The system of Claim 44, wherein said wireless communication state information includes sector status.

49. The system of Claim 44, wherein said wireless communication state information includes received sector pilot channel energy.

50. The system of Claim 49, wherein said received sector pilot channel energy is a ratio of pilot channel chip energy to total interference energy.

51. The system of Claim 44, wherein said wireless communication state information includes the time offset of a received sector pilot channel.

52. The system of Claim 44, further comprising a time interval value indicative of the time between measurements of said current and past wireless communication state information related to said mobile station's current and past positions.

09885436-061801

53. The system of Claim 44, wherein said mobile station includes a format generator, a bearer service stack monitor, and an application interface.

54. The system of Claim 53, wherein said bearer service stack monitor stores base station information.

55. The system of Claim 53, wherein said format generator formats messages so that the highest priority information is positioned near the beginning of the formatted message.

56. The system of Claim 53, wherein said format generator selects information that is most differentiating of the current location of the mobile station.

57. The system of Claim 53, wherein said format generator compiles the information of a requested size.

58. The system of Claim 53, wherein said bearer service stack monitor detects location related wireless communication system states.

59. The system of Claim 53, wherein said bearer service stack monitor detects location related wireless communication system state changes.

60. A system for communicating information related to the position of a mobile station comprising:

a mobile station capable of transmitting and receiving signals to and from a wireless communication infrastructure using code division multiple access techniques;

a wireless communication infrastructure that can transmit and receive signals to and from the mobile using code division multiple access techniques; and

a data server capable of communicating with said wireless communication infrastructure;

wherein said mobile station and said data server communicate via said wireless communication infrastructure using formatted messages representing wireless communication state information including the status of each pilot signal of a subset of the code division multiple access pilot signals known by said mobile station.

61. The system of Claim 60, wherein the status of each pilot signal indicates in-use, desired, or undesired.

62. The system of Claim 61, wherein said in-use status of a pilot signal as represented by said formatted message representing wireless communication state information indicates a pilot signal is within an active set of pilot signals.

63. The system of Claim 61, wherein said desired status of a pilot signal as represented by said formatted message representing wireless communication state information

64. The system of Claim 61, wherein said desired status of a pilot signal as represented by said formatted message representing wireless communication state information indicates a pilot signal is within a neighbor set of pilot signals, wherein the pilot corresponds to a sector which is a candidate for future handoff by the mobile station.

65. The system of Claim 61, wherein said undesired status of a pilot signal as represented by said formatted message representing communication infrastructure state information indicates a pilot signal is within a candidate set of pilot signals corresponding to sectors excluded from immediate consideration for hand-off by the mobile station.

66. The system of Claim 60, wherein said wireless communication state information further comprises received sector pilot channel energy.

67. The system of Claim 60, wherein said wireless communication state information further comprises an estimate of received signal power at the mobile station.

68. The system of Claim 60, wherein said wireless communication state information further comprises the transmission power level of the mobile station.

69. The system of Claim 60, wherein said wireless communication state information further comprises the signal channel currently being used by the mobile station.

70. The system of Claim 60, wherein said wireless communication state information further comprises the system identification.

71. The system of Claim 60, wherein said wireless communication state information further comprises the network identification.

72. The system of Claim 60, wherein said wireless communication state information further comprises the user zone identification.

73. The system of Claim 60, wherein said wireless communication state information further comprises the registration zone identification.

74. The system of Claim 60, wherein said wireless communication state information further comprises a plurality of pseudo-noise offsets corresponding to said plurality of pilot signals.

75. A system for communicating information related to the position of a mobile station comprising:

a mobile station capable of transmitting and receiving signals to and from a wireless communication infrastructure using code division multiple access techniques;

09885436-061801

a wireless communication infrastructure that can transmit and receive signals to and from the mobile using code division multiple access techniques; and

a data server capable of communicating with said wireless communication infrastructure;

wherein said mobile station and said data server communicate via said wireless communication infrastructure using formatted messages representing wireless communication infrastructure state information including the position of base stations monitored by said mobile station.

76. The system of Claim 75, wherein said wireless communication state information further comprises received sector pilot channel energy.

77. The system of Claim 75, wherein said wireless communication state information further comprises an estimate of received signal power at the mobile station.

78. The system of Claim 75, wherein said wireless communication state information further comprises the transmission power level of the mobile station.

79. The system of Claim 75, wherein said wireless communication state information further comprises the signal channel currently being used by the mobile station.

0985436-061001

80. The system of Claim 75, wherein said wireless communication state information further comprises the system identification.

81. The system of Claim 75, wherein said wireless communication state information further comprises the network identification.

82. The system of Claim 75, wherein said wireless communication state information further comprises the user zone identification.

83. The system of Claim 75, wherein said wireless communication state information further comprises the registration zone identification.

84. The system of Claim 75, wherein said wireless communication state information further comprises a plurality of pseudo-noise offsets corresponding to said plurality of pilot signals.

85. The system of Claim 75, wherein said positions of each of said base stations is determined by monitoring transmissions of said base stations.

86. The system of Claim 85, wherein said positions of each of said base stations is determined by monitoring of transmissions of said base stations, including information selected from a group of transmitted messages including: (i)

09885436-061801

system parameters message; (ii) neighbor list update message; (iii) handoff direction message.

87. The system of Claim 85, wherein said positions of each of said base stations is determined by monitoring transmissions of said base stations, wherein said monitoring occurs when said mobile station is not engaged in a wireless call, and further wherein said information is stored within said mobile station for later use when said mobile station is engaged in a wireless call.

88. A method for communicating information related to the position of a mobile station comprising communicating between the mobile station and a data server via a wireless communication infrastructure using formatted messages representing current and past wireless communication state information related to current and past positions of the mobile station.

89. The method of Claim 88, further comprising communicating wireless communication state information including system identification.

90. The method of Claim 88, further comprising communicating wireless communication state information including network identification.

91. The method of Claim 88, further comprising communicating wireless communication state information including channel designation.

09885436-061801

92. The method of Claim 88, further comprising communicating wireless communication state information including sector status.

93. The method of Claim 88, further comprising communicating wireless communication state information including received sector pilot channel energy.

94. The method of Claim 93, wherein said received sector pilot channel energy is a ratio of pilot channel chip energy to total interference energy.

95. The method of Claim 88, further comprising communicating wireless communication state information including the time offset of a received sector pilot channel.

96. A method for communicating information related to the position of a mobile station comprising communicating using code division multiple access techniques between the mobile station and a data server via a wireless communication infrastructure using formatted messages representing wireless communication state information including the status of each pilot signal of a subset of the code division multiple access pilot signals known by said mobile station.

97. The method of Claim 96, wherein the status of each pilot signal indicates in-use, desired, or undesired.

98. The method of Claim 97, further comprising said in-use status of a pilot signal as represented by said formatted

09885436-061801

message representing wireless communication state information indicating a pilot signal is within an active set of pilot signals.

99. The method of Claim 97, further comprising said desired status of a pilot signal as represented by said formatted message representing wireless communication state information indicating a pilot signal is within a candidate set of pilot signals.

100. The method of Claim 97, further comprising said desired status of a pilot signal as represented by said formatted message representing wireless communication state information indicating a pilot signal is within a neighbor set of pilot signals, wherein the pilot corresponds to a sector which is a candidate for future handoff by the mobile station.

101. The method of Claim 97, further comprising said undesired status of a pilot signal as represented by said formatted message representing communication infrastructure state information indicating a pilot signal is within a candidate set of pilot signals corresponding to sectors excluded from immediate consideration for hand-off by the mobile station.

102. A method for communicating information related to the position of a mobile station comprising communicating between the mobile station and a data server via a wireless

09885436-061301

communication infrastructure using formatted messages representing wireless communication infrastructure state information including the position of base stations monitored by said mobile station.

103. The method of Claim 102, further comprising communicating wireless communication state information including received sector pilot channel energy.

104. The method of Claim 102, further comprising communicating wireless communication state information including an estimate of received signal power at the mobile station.

105. The method of Claim 102, further comprising communicating wireless communication state information including a transmission power level of the mobile station.

106. The method of Claim 102, further comprising communicating wireless communication state information including the signal channel currently being used by the mobile station.

107. The method of Claim 102, further comprising communicating wireless communication state information including a system identification.

108. The method of Claim 102, further comprising communicating wireless communication state information including a network identification.

09885436-061801

109. The method of Claim 102, further comprising communicating wireless communication state information including a user zone identification.

110. The method of Claim 102, further comprising communicating wireless communication state information including a registration zone identification.

111. A mobile station capable of transmitting and receiving signals to and from a data server via a wireless communication infrastructure, wherein the mobile station comprises a message formatter which generates formatted messages representing current and past wireless communication state information related to said current and past positions of said mobile station.

112. A mobile station capable of transmitting and receiving signals to and from a data server via a wireless communication infrastructure, wherein the mobile station comprises a message formatter which generates formatted messages representing wireless communication state information including the status of each pilot signal of a subset of the code division multiple access pilot signals known by said mobile station.

113. A mobile station capable of transmitting and receiving signals to and from a data server via a wireless communication infrastructure, wherein the mobile station

09885436 "051301

comprises a message formatter which generates formatted messages representing wireless communication infrastructure state information including the position of base stations monitored by said mobile station.

114. A data server capable of transmitting and receiving signals to and from a mobile station via a wireless communication infrastructure, wherein the data server determines the position of the mobile station from formatted messages representing current and past wireless communication state information related to said current and past positions of said mobile station.

115. A data server capable of transmitting and receiving signals to and from a mobile station via a wireless communication infrastructure, wherein the data server determines the position of the mobile station from formatted messages representing wireless communication state information including the status of each pilot signal of a subset of the code division multiple access pilot signals known by said mobile station.

116. A data server capable of transmitting and receiving signals to and from a mobile station via a wireless communication infrastructure, wherein the data server determines the position of the mobile station from formatted messages representing wireless communication infrastructure

09885436 "061801

state information including the position of base stations
monitored by said mobile station.

09885436-061801